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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,109	12/14/2000	Mary E. Pierce	072545-0037	8505

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12/05/2002

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EXAMINER

WACHTEL, ALEXIS A

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 12/05/2002

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/737,109

Applicant(s)

PIERCE, MARY E.

Examiner

Alexis Wachtel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Detailed Action

Response to Amendment

1. Applicant's amendment and accompanying Remarks filed 9-25-2002 have been entered and carefully considered.

The amendment is sufficient to overcome the obviousness rejections of claims 1-62 since the previously applied prior art fails to teach the claimed reinforcing fiber composition. However, an updated search yielded new prior art that provides a new basis of rejection as shown below. Applicant's arguments are rendered moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 18-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paper 22/97 in view of US 3,847,626 to Erickson et al.

Paper 22/97 teaches that traditional HEPA filter media contains micro glass fibers with diameters between 0.1 and 3 μm . Reinforcement fibers of 6-7 μm (which reads on an average diameter of 6.5 μm) are used as well. Boron-free glass reinforcing fibers were disclosed as highly desirable and enabled (5. Introduction, paragraphs 1-5). Such filters are flexibly reinforced by organic binders (1. Introduction, paragraphs 2 and 3). Glass 9A, identified as useful in filter applications has the following composition:

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SiO₂ 70.0-71.0, B₂O₃ < 0.1, Al₂O₃ 3.0-3.5, Na₂O 10.0-11.0, K₂O 5.0-6.0, CaO 5.5-6.0, MgO 2.5-3.0, ZnO 0.5-0.7 (Fig. 1). Examiner additionally notes that glass 9A can be considered a glass wool. Should Applicant contest this assertion, evidence should be provided to describe the differences in glass wool fiber structure as compared to other glass fibers. The filter media was made on a pilot paper machine. Examiner stresses that the wet laid process is most commonly performed by paper machines. As such, the reinforcing fibers AND glass 9A fibers, if provided in continuous form, are chopped before being used in a filter made by a wet laid process as this is required processing for making a wet laid nonwoven. Examiner wishes to note that all the fibers in the nonwoven are chopped as a result of using a wet laid paper making process.

Regarding claims 21-36, Paper 22/97 fails to teach the glass reinforcing fiber's claimed amounts of components per claims 21-36. Erickson et al is directed to boron free glass compositions that are fiberizeable and teaches an E-glass replacement that has by weight %: 54.5-60% SiO₂, 9 to 14.5% Al₂O₃, 17 to 24% CaO, 3 to 5% TiO₂ and 1.5 to 4% MgO (Col 2, lines 53-60). Since Paper 22/97 identifies a need for a reinforcing fiber free of boron, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the fiberizeable E-glass replacement composition that is free of boron for the reinforcing fibers motivated by the desire to make use of an effective boron free glass composition that effectively meets the requirements set forth by paper 22/97 and motivated by the expectation of limiting pollutants as taught by Erickson (Col 1, lines 5-13).

With regards to claims 6 and 7, Paper 22/97 as set forth fails to teach the claimed length to diameter ratio of the micro glass fibers used to make the filter. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the strength, stability and bonding characteristics of the micro glass fibers by selecting the appropriate fiber lengths and thusly obtaining the desired length to diameter ratio through the process of routine experimentation.

With regards to claim 9, Paper 22/97 as set forth fails to teach the claimed length of the chopped fibers. Examiner takes Official Notice that it is common and well known in the art to use fibers of a short and finite in a wet laid process. As such, it would have been obvious to have utilized the claimed fiber length in filter production. Such a modification would have been motivated by the desire to promote dispersion of fibers in the aqueous slurry used to make a wet laid nonwoven. The examiner notes that the facts asserted to be common and well-known are capable of instant and unquestionable demonstration as being well-known. To adequately traverse such a finding, an applicant must specifically point the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. Chopped fibers of the claimed length are so common in the art that the filter disclosed by Paper 22/97 may already be using them.

With regards to claims 60-62, Paper 22/97 as set forth fails to teach the claimed percent weight range that the chopped fibers account for in the nonwoven filter. It would have been obvious for one of ordinary skill in the art at the time the invention was

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made to have optimized the strength of the wet laid nonwoven filter by selecting the amount of the chopped fibers through the process of routine experimentation.

With regards to claims 11 and 12, Paper 22/97 as set forth fails to teach the claimed percent weight range that the organic binder accounts for in the nonwoven filter. It would have been obvious for one of ordinary skill in the art at the time the invention was made to have optimized the strength of the wet laid nonwoven filter by selecting the amount of binder through the process of routine experimentation.

With regards to claims 18-20, Paper 22/97 fails to teach the use of a surfactant in said nonwoven filter, and in particular, use of said surfactant in the claimed percentile amount. Examiner takes Official Notice that it is common and well known in the art to use a surfactant to aid in the dispersion of fibers in a wet laid process. As such, it would have been obvious to have utilized a surfactant. Such a modification would have been motivated by the desire to promote dispersion of fibers in the aqueous slurry used to make a wet laid nonwoven. The examiner notes that the facts asserted to be common and well-known are capable of instant and unquestionable demonstration as being well-known. To adequately traverse such a finding, an applicant must specifically point the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. In addition, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have optimized the dispersability of the fibers used in the wet laid process to make the nonwoven fabric by selecting the amount of surfactant through the process of routine experimentation.

Regarding claims 37 and 38, Paper 22/97 in view of US 3,847,626 to Erickson et al fails to teach the claimed amounts of SiO_2 . However, since SiO_2 is the main component in glass, it would have been obvious for one of ordinary skill in the art to have optimized the crystallization characteristics or strength of the glass fiber resulting from fiberizing the glass composition through the process of routine experimentation.

4. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paper 22/97 in view of US 5,156,780 to Kenigsberg et al.

Paper 22/97 as set forth fails to teach incorporating a water repellent in the nonwoven filter. Kenigsburg et al is directed to treatments of porous substrates for achieving improved water and oil repellency and teaches that it is desirable for porous materials to repel water and oil while allowing, at the same time the passage of air and other gases. This is particularly true in the case of microporous materials which are designed in many instances to allow the passage of a particular gas while preventing a broad spectrum of liquids (Col 1, lines 24-36). Examiner notes that nonwoven filters of the type disclosed by Paper 22/97 are an example of microporous materials. Zonyl®, a well known fluoroacrylate is known to be used in water repellency applications (Col 1, lines 45-52). In view of this teaching, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have incorporated a fluoroacrylate water repellent into the nonwoven filter of Paper 22/97 motivated by the desire to increase the operational lifetime of said nonwoven filter.

Paper 22/97 in view of Kenigsburg et al fails to teach the claimed percent weight of the nonwoven filter that the fluoroacrylate water repellent accounts for.

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However, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have optimized the water repellent characteristics of said nonwoven filter by selecting the amount of water repellent used through the process of routine experimentation.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paper 22/97 in view of US 6,155,432 to Wilson et al.


Paper 22/97 as set forth fails to teach the use of a styrene acrylic binder in the filter. Wilson et al is directed to filters and teaches that filters made by a wet laid process conventionally use a binder such as styrene acrylic to promote the resulting filter's integrity (Col 7, lines 1-30, 35-39). In view of this teaching it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a binder such as styrene acrylic as the organic binder of choice for promoting the structural integrity of Paper 22/97's filter motivated by the desire to make use of well known and suitable binder.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Alex Wachtel, whose number is (703)-306-0320. The Examiner can normally be reached Mondays-Fridays from 10:30am to 6:30pm.

If attempts to reach the Examiner by telephone are unsuccessful and the matter is urgent, the Examiner's supervisor, Mr. Terrel Morris, can be reached at (703) 308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


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